IN THE CLAIMS

1. (Currently amended) Electrical treatment apparatus for use with an associated molecule source, comprising:

at least one electrode;

a power source for electrifying said at least one electrode; and

a controller, which is programmed to activate the power source to selectively electrify said at least one electrode to apply at least one electric field whichincluding has a transport effect for transporting a molecule in a desired manner and has a non-excitatory control effect, independent of the transport effect, foradapted to electrically controlling anthe activity of at least a part of a heart,

said programming selected to achieve a desired provision of said molecule into at least a portion of a patient's heart or associated vasculature.

2. (Original) Apparatus according to claim 1, wherein said controller is hardware programmable.

3. (Original) Apparatus according to claim 1, wherein said controller is software programmable.

4. (Previously Presented) Apparatus according to claim 2, comprising a wireless programming input.

5. (Previously Presented) Apparatus according to claim 1, wherein said programming comprises programming adapted for said patient.

6. (Previously Presented) Apparatus according to claim 1, wherein said programming comprises a setting of at least one operational parameter of said apparatus.

7. (Currently amended) Apparatus according to claim 1, wherein said programming comprises a selection of at least one operational protocol from a set of available protocols in said apparatus.

8. (Previously Presented) Apparatus according to claim 1, wherein said controller is operable in a testing mode, in which mode a test treatment of a molecule is provided to the patient and the response of the patient to the test is monitored by said controller.

9. (Previously Presented) Apparatus according to claim 1, comprising a synchronization connection to a molecule source containing said at least one type of molecule.

10. (Original) Apparatus according to claim 9, wherein said synchronization connection comprises an informative connection that provides at least one informative signal to said controller, informing of a state of molecule release.

11. (Previously Presented) Apparatus according to claim 9, wherein said synchronization connection comprises a control connection that provides at least one control signal from said controller, to control a state of molecule release.

12. (Original) Apparatus according to claim 11, wherein said molecule source is an electric-field mediated molecule source and wherein said control signal generates an electric field that releases said molecule from said source.

13. (Currently amended) Apparatus according to claim 12, wherein said synchronization connection is comprised in said at least one electrode ~~used for applying a transport effect~~.

14. (Original) Apparatus according to claim 13, wherein said molecule source is integral with said electrode.

15. (Original) Apparatus according to claim 13, wherein said molecule source comprises blood dispersed molecules.

16. (Currently amended) Apparatus according to claim 1, wherein said molecule source is integral with said at least one electrode ~~used for applying a transport effect~~.

17. (Previously Presented) Apparatus according to claim 1, wherein said molecule source is integral with said apparatus.

18. (Previously Presented) Apparatus according to claim 1, wherein said molecule source is external to said apparatus.

19. (Previously Presented) Apparatus according to claim 1, wherein said molecule source comprises a catheter, coupled to said apparatus outside said patient.

20. (Previously Presented) Apparatus according to claim 1, wherein said molecule source comprises a source of a plurality of molecule types.

21. (Original) Apparatus according to claim 20, wherein said controller controls said molecule source to selectively release at least a particular one of said plurality of molecule types.

22. (Previously Presented) Apparatus according to claim 1, comprising at least one sensor that senses a cardiac parameter and provides said sensed parameter to said controller.

23. (Original) Apparatus according to claim 22, wherein said sensor measures a cardiac parameter relating to the entire heart.

24. (Original) Apparatus according to claim 22, wherein said sensor measures a cardiac parameter relating to a portion of the heart.

25. (Previously Presented) Apparatus according to claim 22, wherein said controller analyses said sensed parameter to detect an effect of said molecule on said heart.

26. (Previously Presented) Apparatus according to claim 22, wherein said controller analyses said sensed parameter to detect an activity of the heart and wherein said controller synchronizes said provision to said sensed activity.

27. (Previously Presented) Apparatus according to claim 22, wherein said controller analyses said sensed parameter to detect an effect of said transport field on said heart.

28. (Previously Presented) Apparatus according to claim 22, wherein said controller modifies said at least one electric field to modify said transport effect responsive to said sensed parameter.

29. (Previously Presented) Apparatus according to claim 22, wherein said controller modifies said at least one electric field to modify said control effect responsive to said sensed parameter.

30. (Previously Presented) Apparatus according to claim 22, comprising a watchdog that detects an abnormal effect of said applied fields.

31. (Previously Presented) Apparatus according to claim 22, comprising a watchdog that detects an abnormal effect of said molecule.

32. (Previously Presented) Apparatus according to claim 1, comprising a user input for receiving an indication of an effect of said apparatus from said patient.

33. (Currently amended) Apparatus according to claim 1, wherein the controller is adapted to apply a single electric field ~~applies~~which has both of said transport effect and said control effect.

34. (Currently amended) Apparatus according to claim 1, wherein the controller is adapted to apply ~~said at least one electric field comprises~~ at least one transport field which has a transport effect but not a control effect and at least one control field which has a non-excitatory control effect.

35. (Currently amended~~Previously Presented~~) Apparatus according to claim 34~~1~~, wherein the controller is adapted to apply the transport field and control field ~~said transport effect and said control effect are provided~~ simultaneously.

36. (Currently amended) Apparatus according to claim 34~~1~~, wherein the controller is adapted to apply the transport field and control field ~~said transport effect and said control effect are applied~~ sequentially.

37. (Currently amended) Apparatus according to claim 34~~1~~, wherein the controller is configured to apply during a single heart treatment session a transport field which ~~said control effect~~ is accompanied by the control field ~~selectively applied in association with~~ only during part of the application of the ~~some of said~~ transport ~~effects~~field.

38. (Previously Presented) Apparatus according to claim 1, comprising at least one pacing electrode that is controlled by said controller to apply a pacing pulse.

39. (Original) Apparatus according to claim 38, wherein said at least one pacing electrode is comprised in said at least one electrode.

40. (Previously Presented) Apparatus according to claim 1, wherein said transport effect is provided by an excitatory field.

41. (Previously Presented) Apparatus according to claim 1, wherein said transport effect is provided by a non-excitatory field.

42. (Previously Presented) Apparatus according to claim 1, comprising an output port for generating an output to said patient.

43. (Previously Presented) Apparatus according to claim 1, wherein said control effect is selected to prevent an adverse effect of said transport pulse.

44. (Previously Presented) Apparatus according to claim 1, wherein said control effect is selected to prevent an adverse effect of said molecule.

45. (Previously Presented) Apparatus according to claim 1, wherein said molecule is selected to counteract an adverse effect of said control effect.

46. (Previously Presented) Apparatus according to claim 1, wherein said control effect is selected to counteract an adverse effect of said molecule.

47. (Previously Presented) Apparatus according to claim 1, wherein said control effect is selected to prepare said tissue for said transport.

48. (Previously Presented) Apparatus according to claim 1, wherein said control effect is selected to extend a period of time suitable for provision of said molecule.

49. (Previously Presented) Apparatus according to claim 1, wherein said control effect and said molecule are selected to cooperate and effect a desired treatment of said tissue.

50. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode comprises at least one transport electrode for applying a transport effect of said at least one field and at least one control electrode for applying said control effect of said at least one field.

51. (Previously Presented) Apparatus according to claim 1, wherein said transport effect and said control effect of said at least one electric field are applied using at least one common electrode of said at least one electrode.

52. (Original) Apparatus according to claim 50, wherein said at least one control electrode is spatially displaced from said at least one transport electrode.

53. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode comprises a point electrode.

54. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode comprises a spiral electrode.

55. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode comprises a linear electrode.

56. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode comprises a mesh electrode.

57. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode comprises a plate electrode.

58. (Previously Presented) Apparatus according to claim 55, wherein said electrode comprises a plurality of independently electrifiable contacts.

59. (Currently amended) Apparatus according to claim 58, wherein said controllers selectively electrifies said independent contacts to achieve a desired, non-uniform, volumetric dispersion of said molecule, relative to said electrode.

60. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode is connected by wire to said controller.

61. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode is a wireless electrode.

62. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode is implantable.

63. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode is mounted on a catheter.

64. (Previously Presented) Apparatus according to claim 1, wherein said at least one electrode is an external electrode.

65. (Previously Presented) Apparatus according to claim 1, wherein said apparatus is implantable.

66. (Currently Amended) Apparatus according to claim 1, wherein said apparatus is comprised in a cylindrical body adapted for implantation inside a blood vessel.

67. (Previously Presented) Apparatus according to claim 1, wherein said apparatus is wholly external to the patient.

68. (Previously Presented) Apparatus according to claim 1, wherein said transport effect comprises iontophoresis.

69. (Previously Presented) Apparatus according to claim 1, wherein said transport effect comprises electroporation.

70. (Currently amended) A method of selectively delivering a molecule, comprising:

providing a molecule adjacent a heart; and

applying at least one electric field having~~including~~ a transport effect for transporting a molecule in a desired manner into at least a portion of said heart or ~~associated~~ vasculature associated with the heart and having a non-excitatory electrical control effect for controlling the activity of at least a part of said heart.

71. (New) Apparatus according to claim 1, wherein the controller is not configured to apply excitatory electrical fields.

72. (New) Apparatus according to claim 1, wherein the transport effect comprises releasing the molecule from a reservoir into tissue.

73. (New) Apparatus according to claim 1, wherein the transport effect comprises transporting the molecule within tissue.

74. (New) Apparatus according to claim 1, wherein the transport effect comprises transporting the molecule into tissue cells.

75. (New) Electrical treatment apparatus, comprising:

a molecule source adapted to provide molecules to tissue;

at least one electrode;

a power source for electrifying said at least one electrode; and

a controller, which is programmed to activate the power source to selectively electrify said at least one electrode to apply at least one electric field which has a transport effect for transporting a molecule provided by the source, within the tissue.

76. (New) Apparatus according to claim 75, wherein the transport effect comprises transporting the molecule into tissue cells.

77. (New) Apparatus according to claim 75, wherein the molecule source is separate from the electrode.

78. (New) Apparatus according to claim 75, wherein the transport effect comprises opening pores in tissue membrane.

79. (New) Apparatus according to claim 75, wherein the transport effect is configured for a molecule with a dipole charge.

80. (New) Apparatus according to claim 75, wherein the electric field with the transport effect is timed such that the molecule is available at tissue cells when channels of the cells are open as part of the cardiac cycle.

81. (New) Apparatus according to claim 75, wherein the electric field with the transport effect is adapted to relax or contract blood vessel muscles.

82. (New) A method of selectively delivering a molecule, comprising:

providing a molecule adjacent a heart; and

applying at least one electric field having a transport effect for transporting the molecule within tissue of the heart or a vasculature associated with the heart, in a desired manner.

83. (New) Electrical treatment apparatus for use with an associated molecule source, comprising

at least one electrode;

a power source for electrifying said at least one electrode; and

a controller, which is programmed to activate the power source to selectively electrify said at least one electrode to apply at least one electric field which has a transport effect for transporting a molecule into or within electrically excitable tissue of a patient, without exciting the tissue of the patient.

84. (New) Apparatus according to claim 83, comprising at least one sensor, and wherein the controller programs the electric field responsive to readings from the sensor.

85. (New) A method of selectively delivering a molecule, comprising:

providing a molecule adjacent excitatory tissue; and

applying at least one electric field having a transport effect for transporting the molecule into or within the electrically excitable tissue, without exciting the tissue.

86. (New) A method according to claim 85, wherein applying the field without exciting the tissue comprises applying the field substantially only during times at which the tissue does not respond to electrical fields.

87. (New) A method according to claim 85, wherein applying the electric field comprises applying to heart tissue.

88. (New) A method according to claim 85, wherein applying the electric field comprises applying a field which is non-excitatory due to its frequency, waveform or duration.

89. (New) A method according to claim 85, wherein applying the electric field comprises applying a field which is non-excitatory due to its amplitude.